Title

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Abstract

Evidence suggests that entertainment media may influence knowledge, attitudes, and behaviors related to health topics. After the overturning of *Roe v. Wade*, it is critical to examine how these media may be associated with people's knowledge, attitudes, and behavioral intentions related to abortion. Using a non-experimental ex post facto design, we examined whether exposure to any of three abortion plotlines was correlated with (a) greater knowledge about abortion, (b) lower stigmatizing attitudes about abortion, and (c) higher likelihood of supporting someone seeking an abortion among a sample of television audience members ($N = 1{,}016$), administered via a survey on Qualtrics. We selected three scripted, fictional abortion plotlines on the U.S. television shows *Station 19*, *Better Things*, and *A Million Little Things*, based on medical accuracy and airdates near each other in March 2022. Exposure to a plotline was defined as accurately answering at least two recall questions about a given plotline. We found that compared to those who were not exposed to any of the plotlines, exposure to any of the three plot lines was associated with greater knowledge about abortion and higher willingness to support a friend seeking an abortion, but not with lower stigmatizing attitudes. Exposure to medically accurate depictions of abortion on television may be one way to improve knowledge about abortion and community support for people seeking abortion.

Keywords Television · Abortion · Abortion stigma · Entertainment · Attitudes · Media representations · Narrative persuasion

In the weeks and months following the June 2022 Supreme Court decision *Dobbs v. Jackson Women's Health Organization*, which revoked federal protections for abortion rights, scholars, advocates, and journalists scrambled to make sense of this new political reality. Some pointed to the past decade of unprecedented legislative restrictions that already rendered abortion logistically and financially inaccessible for many pregnant people (Guttmacher Institute, 2022). Many journalists, in such outlets as *The Washington Post* (Hornaday, 2022) and *The Los Angeles Times* (McNamara, 2022), critiqued the lack of accurate and lived representations of abortion on popular television and film as key contributors

to the cultural and political landscape that resulted in the *Dobbs* decision.

Despite these claims, research consistently finds that abortion *is* represented in U.S. popular culture, though perhaps not to the degree and under the circumstances in which it occurs in real life (Herold & Sisson, 2020). Indeed, television often depicts abortion in strikingly inaccurate ways: overemphasizing medical risk (Sisson & Rowland, 2017), misrepresenting patient demographics (Herold & Sisson, 2020), portraying improbably few political and geographic barriers to care (Sisson & Kimport, 2017), and misrepresenting the procedure itself (Herold & Sisson, 2019). However, there are both recent and historical examples of abortion plotlines on television that are medically accurate and come closer to representing the reality of both patient demographics and the abortion access experience (Herold & Sisson, 2020). Exploring whether these representations of abortion are associated with audience knowledge, attitudes,

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and behavior is helpful as a first step in elucidating the role television may play in shaping abortion knowledge and attitudes.

The relationship between television portrayals and viewers' attitudes and behaviors, especially related to health issues, is mixed. Systematic reviews have found that fictional health storylines have significant yet small effects on health knowledge and outcomes, and many outstanding questions remain, including if and how these changes last over time, and the "dose" needed to achieve and sustain these effects (Hoffman et al., 2022; Hoffman et al., 2017). Because television programs about health issues are popular with viewers, the extant literature on the possible influence of these plotlines is vast and contains experimental, quasi-experimental, correlational, and descriptive studies. Several reviews of over 300 peer-reviewed studies document the mixed influence of television programs on viewer knowledge, health outcomes, behavioral intent, attitudes, and other related measures (Hoffman et al., 2022; Hoffman et al., 2017; Shen et al., 2015).

Medical dramas may be an important source of health information for viewers (Rideout, 2008), with some studies finding associations between exposures to plotlines about health issues and positive behavior change or behavior intention, such as increased intention to pursue a mammography screening for breast cancer after exposure to a medical drama about breast cancer (Rosenthal et al., 2018; Hether et al., 2008). Consistent with these findings, exposure to sexual and reproductive health content on television may be correlated with greater knowledge and higher intention to participate in some safer sex behaviors (Coyne et al., 2019). Much of this research focuses on the association between exposure to plotlines and patterns in sexual behavior, such as attitudes towards or intention to use contraception. Some studies, for example, find that televisual depictions of contraceptive use are correlated with greater knowledge about contraception, including greater knowledge about correct condom use (Wang & Singhal, 2016) and increased intent to use contraception (Moyer-Gusé et al., 2011). Other research finds that exposure to plotlines about specific types of contraception is correlated with attitude change, such as positive attitudes towards long-acting reversible contraception (Saucier et al., 2022). Other studies find that exposure to television plotlines about sexually transmitted infections (STIs) is correlated with intention to pursue STI testing and encourage others to test (Whittier et al., 2005). The literature on abortion portrayals is more limited and indicates that exposure to these depictions may be associated with greater knowledge but not with changes in attitudes (Brooks et al., 2022; Sisson et al., 2021).

The intractability of abortion attitudes is likely related to the omnipresent nature of abortion stigma, which is anchored to gendered ideas about femininity and motherhood. Abortion seeking represents "a violation of female ideals of sexuality and motherhood" (Norris et al., 2011, p. 49); that is, in obtaining an abortion, a pregnant person rejects conservative gender norms related to womanhood and chooses herself, and/or her current children, over her pregnancy (Kumar et al., 2009). Gendered negative stereotypes about the "type" of person who seeks an abortion as selfish, immature, or otherwise "deviant" are key components of abortion stigma (Cockrill & Nack, 2013) and are correlated with negative views of abortion legality (Patev et al., 2019). Further, cultural and political understandings of abortion have the power to shape access to abortion care, and thus shape the trajectory of pregnant peoples' lives.

Little research has investigated the association between exposure to television abortion plotlines and viewer abortion knowledge, attitudes, and behaviors. Indeed, a recent scoping review found only two studies analyzing the relationship between abortion portrayals and viewer attitudes over a ten-year period (Sorhaindo & Loi, 2022). The present study uses a quasi-experimental ex post facto design with an online sample of natural viewers of three television shows with abortion plotlines to examine if viewers exposed to any of the three abortion plotlines (and to each of the three individual plot lines) were more likely to have greater knowledge about abortion compared to unexposed audiences (Hypothesis 1), lower stigmatizing attitudes towards abortion compared to unexposed audiences (Hypothesis 2), and higher willingness to support a family member or friend seeking an abortion compared to unexposed audiences (Hypothesis 3).

Factors Shaping Abortion Knowledge and Attitudes

Decades of research has documented trends in U.S. abortion knowledge and attitudes, including public opinion polls, such as Gallup and the Pew Research Center, national surveys such as the General Social Survey (Bowman & Sims, 2017), and academic scholarship. These surveys commonly include measures to assess attitudes about abortion legality, attitudes toward the circumstances in which abortion should be legal, attitudes related to who should be able to restrict, legislate, or decide to have an abortion, and knowledge about *Roe v. Wade* (Crawford et al., 2021). National polling data consistently show that most of the U.S. residents support abortion legality (Pew Research Center, 2022). Specific demographic and ideological attributes are often correlated with support for abortion legality, including less religiosity, increased educational attainment, increased income, and political party identification as progressive or Democrat

(Adamczyk et al., 2020; Jozkowski et al., 2018). Research provides inconsistent insights into how other demographic variables, most notably race and gender, correlate with abortion attitudes. Some scholarship, for example, finds that cisgender women are more supportive of abortion rights than cisgender men (i.e., Patel & Johns, 2009), while others report that gender is not correlated with abortion attitudes, but instead, endorsement of traditional gender roles predicts a lack of support for legal abortion (Huang et al., 2016). Similarly, public opinion polls find that Black voters are more likely to support abortion legality than white voters (Pew Research Center, 2022), while academic research contends that this support is often mediated by religiosity and educational attainment (Bruce, 2020) as well as racist and sexist attitudes (Baker et al., 2022).

Scholarship conceptualizing and measuring the phenomenon of community-level abortion stigma provides broader context to individual-level abortion attitudes. Community-level abortion stigma specifically refers to "a community's attitudes towards people who seek, have had, or provide abortions; how people treat those individuals, and opinions toward policies that govern abortion" (Cutler et al., 2021). Some research has found possible correlations between stigmatizing attitudes towards abortion, increased religiosity, and conservative political affiliation (Cutler et al., 2021).

Compared to surveys of abortion attitudes, assessments of abortion knowledge are limited. Most published research focuses on knowledge related to abortion laws and endorsement of myths related to abortion safety, finding that participants have little knowledge of the legal status of abortion both nationally (Swartz et al., 2020) and locally (White et al., 2016), and often believe medically inaccurate information about abortion (Berglas et al., 2017). Notably, knowledge about abortion laws may be lowest in states in which abortion is restricted (Swartz et al., 2020); we suspect that this trend continues given the legal confusion and increased media attention on rapidly changing abortion laws in a post-*Dobbs* environment.

To the best of our knowledge, there are few widely accepted, validated scales of either abortion attitudes or abortion knowledge. Many current measures are critiqued as methodologically inadequate, as they fail to capture the nuance and complexity often inherent in abortion attitudes. Participants change their views on abortion legality and acceptability depending on the context in which the abortion decision is taking place, with respondents being more sympathetic to abortion decision-making in some circumstances (i.e., rape, fetal anomaly, incest) rather than others (i.e., financial circumstances) (Hans & Kimberly, 2014). Participants may hold seemingly contradictory attitudes towards abortion morality and legality, responding, for example, that abortion is morally wrong and that it should not be made

illegal (Newport & Bird, 2017). Life circumstances, including having an abortion, also influence abortion attitudes; Woodruff and colleagues found that in a sample of women who obtained abortions, most were in favor of legal abortion, yet about 20% believed that abortion is morally wrong (2018). In recognition of the complex interplay between morality, legality, and the rapidly changing policy environment related to abortion, researchers have increasingly called for new instruments that account for these factors (Cowan et al., 2022). Others have critiqued current measures of abortion attitudes as reproducing inequalities under the guise of scientific objectivity (McClelland et al., 2020). We discuss in detail how we addressed these concerns in the present study in our methods section.

Theoretical Background

Communications studies and media effects research explore the complex processes by which entertainment media may influence knowledge and attitudes related to health topics. Television can reinforce preexisting attitudes through the "echo chamber phenomenon" in which viewers purposefully or subconsciously seek out content consistent with their viewpoints (Ruggiero, 2000). In this model, audience attitudes and identities may lead them to select certain media to consume, which, in turn, reinforce their existing attitudes, behaviors, and values (Slater, 2015). While this phenomenon is often theorized as a mechanism by which negative attitudes remain entrenched, an "echo chamber" effect may also contribute to compounding positive attitudes among viewers; one review of the literature on the effect of television on audience racial and ethnic diversity attitudes found that "audiences open to diversity may follow a reinforcing spiral where television improves their positive diversity attitudes and their existing positive attitudes determine their selection of media content that supports these views" (Żerebecki et al., 2021, p. 14).

Our research on the shaping of abortion attitudes is informed by various narrative persuasion theories, including the echo chamber theory, described above, and social cognitive theory (SCT), which posits that audiences may experience vicarious learning by observing positive interactions between in-group (majority) and out-group (minority) characters, creating a form of vicarious contact with minority groups that might encourage positive real-life interactions (Bandura, 2002). Media depictions of positive interactions between majority and minority group members (i.e., white characters and Black characters, respectively) are, per SCT, a crucial component of mitigating prejudice, while negative depictions of intergroup interactions may exacerbate existing prejudicial attitudes (Banas et al., 2020). In studies

employing SCT to evaluate possible correlations between health-related storylines and viewer knowledge, attitudes, and behaviors, the greater the number of episodes a viewer watched, the more likely they were to report increased knowledge and increased health-seeking behavior (Rosenthal et al., 2018; Hether et al., 2008).

Many studies use these narrative persuasion theories to undergird experimental, quasi-experimental, and correlational studies of media effects. While there are few theoretically driven studies on the impact of abortion plotlines and narratives, others build on these narrative persuasion theories to undergird analyses of one-time exposure to other types of television plotlines. One study, for example, tested the effect of one-time exposure to a television plotline on organ donation on audience attitudes, knowledge, and beliefs, and found that both knowledge and beliefs about organ donation were correlated with the content depicted in the plotline (Morgan et al., 2009). Another study measured the correlation between one-time exposure to a television plotline about syphilis and behavioral intent to pursue syphilis testing among a sample of cisgender gay men, finding episode viewers were more likely than non-viewers to report the intention to pursue testing for themselves and recommend it to others (Whittier et al., 2005). Correlational studies often provide the conceptual foundation or rationale for future experimental studies, and it is our hope that this study contributes in that way.

Television Episodes with Abortion Plotlines

We selected three television episodes with medically accurate depictions of abortion that aired within weeks of each other in March 2022 on the television dramas *Better Things*, *Station 19*, and *A Million Little Things*. We selected these episodes first and foremost because they aired relatively close together, so there was a chance that participants viewed at least one of them recently. Second, the episodes had medically accurate information about abortion, including depicting a medication abortion (*Station 19*), and included emotional nuance, such as providing ideas for how to ask for support after an abortion (*A Million Little Things*). Two of the plotlines (*Better Things* and *A Million Little Things*) included in-depth explorations of abortion stigma; in the former, a character conceals her abortion from her mother because she anticipates judgment, and in the latter, one character is fired from a conservative radio show in which another character discloses her own abortion on air. More details on each plotline follow below.

FX's *Better Things* follows the story of Sam Fox (Pamela Adlon), a single, middle-aged mother and struggling actor raising three daughters in Los Angeles while also caring for her aging mother. In its fifth and final season, the show featured a season-long arc about abortion that focuses on Sam's eldest daughter, Max (Mikey Madison), now a young adult. Airing on March 7, 2022 with about 170,000 viewers (Kimball, 2022a), the *Better Things* episode titled "No, I'm Not Gonna Tell Her" opens with Max exiting a building holding hands with her mother's best friend, a gay man named Rich (Diedrich Bader). They retreat to his car, where Rich comforts her over soda and asks if she wants him to be there when she tells her mom. Referencing the title of the episode, Max says, "oh, I'm not gonna tell her." The scene ends with the camera panning up to the awning of the building, revealing that it is a Planned Parenthood clinic. In a later episode ("Family Meeting"), Max tells Rich that she still does not want to tell her mom about the abortion and asks Rich to disclose this information to her mother. He does so without ever using the word "abortion," and Sam expresses disappointment that her daughter did not confide in her. In the penultimate episode of the series, Sam's mother, Phyllis (Celia Imrie), shares that she had an illegal abortion in the 1950s.

ABC's *Station 19* was in its fifth season between 2021 and 2022 and follows the personal and professional lives of firefighters at Fire Station 19 in Seattle, Washington. On March 10, 2022 the episode titled "The Little Things You Do Together" aired, with about 4.5 million viewers (Kimball, 2022b). It included a plotline about Victoria "Vic" Hughes (Barret Doss) having a medication abortion with the support of her friends and partner. The episode opens with Vic watching television with her friends, one of whom offers to be her abortion doula. She reassures him that her on-again, off-again partner Theo (Carlos Miranda) is accompanying her to her appointment. At the clinic, Vic swallows a mifepristone pill and the provider explains that it will stop the growth of the pregnancy. The provider comes back an hour later and tells her to take misoprostol at home by letting the pills dissolve in her cheek, which will cause the lining of her uterus to contract and expel the pregnancy. The provider says it will feel crampy and like a heavy period. Vic and Theo arrive back at her house, and Theo unpacks comfort food he bought for her. She comments that she took the misoprostol pills, and he's furious she did not wait for him. They have an argument about the status of their relationship. Later, as they are waiting for the misoprostol to take effect, Vic and Theo take a walk and talk about their feelings about the pregnancy and abortion. Theo shares that his mom, a devout Catholic, had an abortion and had no support from her family. Vic stops mid-walk because of a bad cramp, and they head back to the house. Vic sits on the toilet and Theo plays music and sings to her outside the door to distract her from pain, which she says, "is way worse than

a heavy period." Later, they cuddle, and both say, "I love you" to each other.

ABC's *A Million Little Things* takes place in Boston and follows a group of friends who struggle to cope after a mutual friend dies by suicide. In the season four episode "Fresh Start," which aired on March 23, 2022 to about 1.8 million viewers (Kimball, 2022c), Maggie (Allison Millerad) receives a call on her live radio show from a mom asking for advice about if and how to share with her family that she's seeking an abortion. Maggie advises the caller to surround herself with support from friends, and that the decision is hers to make no matter how her family will react. Once the call concludes, Maggie's producer reprimands her and reminds her that the radio network executives are very conservative and would not approve of her discussing abortion on-air. On her next show, Maggie purposefully rebukes her producer's directive and talks about her own abortion, sharing with listeners that it was a personal decision, not a political one, and that she wants to be a mother when she's ready. She tells listeners that they should not judge or shame people who have abortions and directs them to Planned Parenthood for information about abortion and contraception. As a direct result of Maggie discussing abortion, her producer is fired.

Summary of Hypotheses

To build on entertainment education research grounded in social cognitive theory, this paper employs a non-experimental ex post facto design to explore possible relationships between exposure to abortion plotlines and viewers' abortion knowledge, attitudes, and behavioral intent. Specifically, we utilize quantitative survey data to test the following three hypotheses:

• **Hypothesis 1** (HI): Viewers who are exposed to medically accurate abortion plotlines have greater knowledge about abortion compared to non-exposed viewers.

• **Hypothesis 2** (H2): Viewers who are exposed to medically accurate abortion plotlines have relatively positive abortion attitudes compared to non-exposed viewers.

• **Hypothesis 3** (H3): Viewers who are exposed to medically accurate abortion plotlines report higher willingness

to support someone seeking an abortion compared to non-exposed viewers.

Method

Participants and Recruitment

We recruited 1,016 respondents (aged 18–85, median age category: 35–44 years old) via an online Qualtrics research panel. Qualtrics recruited participants by email from market research panels, website intercept recruitment, permission-based networks, and social media who met our eligibility criteria. These criteria included being comfortable completing the survey in English, over the age of 18, and television viewers of at least one of the targeted television shows (*A Million Little Things*, *Better Things*, and/or *Station 19*) in the 2021–2022 television season. Eligible participants received a link to the survey via email, which described the survey as a study of television viewing habits. Qualtrics administers their own incentives and allows participants to select an individual incentive after survey completion, which includes items such as gift cards, cash, and airplane miles. The first and last author worked with Qualtrics to administer a soft launch of the survey to ten respondents and then fifty respondents to test the survey logic and the length of time to survey completion. A total of 3,269 eligible participants started the survey, and 1,016 completed it, giving us a response rate of 31%. The average time to complete the survey was eight minutes. The study received approval from the WCG Institutional Review Board prior to data collection.

As Table 1 shows, the sample consisted of 666 women (66%), 336 men (33%), and 10 genderqueer/nonbinary participants (1%). Seven hundred and thirty-one participants identified as white (72%), 108 as Black (11%), 104 as Latinx (10%), and 69 as Asian or another ethnicity (7%). Most of our sample identified as heterosexual ($n = 875$, 86%) while 135 participants (13%) identified as lesbian, gay, bisexual, queer, or other, which we have combined as "non-heterosexual" for the analysis. Educational attainment varied for participants: 229 had a high school degree or less (22.6%), 270 had some college education (26.6%), 342 had a college degree or some grad school (33.7%), and 173 had a graduate or professional degree (17.1%). The median household income reported was $50,000–70,000 per year. Participants were asked to rank their level of religiosity on a scale of 0 to 10; participants reported a median score of 6, a mean of 5.6, and a standard deviation (*SD*) of 3.1. Slightly less than half of the sample (45.4%, $n = 461$) reported a political affiliation as a Democrat, 338 as Republican (33.3%),

Table 1 Proportions, means, and standard deviations (*SD*) for key study variables

	Full sample (*N*=1,016)	Not exposed to any plotline (*n*=390)	Exposed to any plotline (*n*=643)	Exposed to *A Million Little Things* (*n*=308)	Exposed to *Better Things* (*n*=245)	Exposed to *Station 19* (*n*=345)
	% or Mean (*SD*)	% or Mean (*SD*)	% or Mean (*SD*)	% or Mean (*SD*)	% or Mean (*SD*)	% or Mean (*SD*)
Plotline Exposure						
Any	63.3%	0.0%	100.0%	100.0%	100.0%	100.0%
Million Little Things	30.3%	0.0%	47.9%	100.0%	42.0%	32.2%
Better Things	24.1%	0.0%	38.1%	33.4%	100.0%	23.8%
Station 19	34.0%	0.0%	53.7%	36.0%	33.5%	100.0%
Demographics and Abortion Experience						
Community Level Abortion Stigma Scale (1–5)	3.88 (0.03)	3.87 (0.05)	3.88 (0.04)	3.94 (0.05)	3.78 (0.06)	3.95 (0.05)
Woman (1=Yes)	66.7%	64.8%	66.8%	64.6%	53.9%	74.1%
Man (1=Yes)	33.3%	33.9%	33.0%	35.1%	46.5%	25.6%
Latino (1=Yes)	10.6%	8.3%	12.0%	11.1%	13.5%	10.4%
Black (1=Yes)	12.3%	14.8%	10.9%	12.4%	12.7%	10.1%
White (1=Yes)	76.2%	75.3%	76.6%	75.6%	73.5%	78.6%
Age Category						
18–24	12.5%	14.5%	11.4%	8.4%	13.5%	11.3%
25–34	22.6%	16.4%	26.3%***	26.6%	32.7%	26.4%
35–44	25.1%	22.0%	26.9%	27.9%	29.8%	26.4%
45–54	14.2%	13.7%	14.5%	14.6%	13.9%	13.3%
55–64	9.6%	10.7%	8.9%	9.7%	6.1%	8.4%
65 or older (range: 65–85)	16.0%	22.8%	12.1%***	12.7%	4.1%	14.2%
Sexual Orientation						
Heterosexual	86.6%	87.4%	86.2%	86.0%	84.8%	85.7%
Non-Heterosexual	13.4%	12.6%	13.8%	14.1%	15.2%	14.3%
Education Level						
High School or Less	22.6%	24.9%	21.2%	16.9%	20.0%	23.6%
Some College	26.6%	31.9%	23.6%**	22.8%	22.5%	23.3%
College Degree or Some Grad School	33.7%	30.0%	35.9%	37.8%	35.5%	36.3%
Graduate/Professional Degree	17.1%	13.1%	19.3%*	22.5%	22.0%	16.9%
Had an Abortion (1=Yes)	12.2%	12.1%	12.3%	14.9%	12.7%	11.6%
Partner Had an Abortion (1=Yes)	7.2%	7.5%	7.0%	6.8%	10.2%	6.1%
Friend Had an Abortion (1=Yes)	32.5%	27.4%	35.5%**	38.0%	39.2%	35.7%

169 as no party preference (16.6%), and 32 as Independent or other (3.1%), with 16 (1.6%) abstaining from answering the question. In terms of experience with abortion, 124 have had an abortion (12% of the sample; 19% of the women sampled), 73 have had a partner who has had an abortion (7%), and 330 have a friend who has had an abortion (32%). The number of women participants who reported past personal experience with abortion (19%) is close to the national average (20%) of American women who report past abortions (Jones et al., 2022), suggesting that participants are likely not underreporting abortions.

Procedures and Measures

Participants were screened from May 2 – May 12, 2022, and were required to select that they were at least "occasional" watchers of at least one of the targeted television shows (defined as watching at least one episode of the season) to be eligible to take the full survey. For each television show that a participant selected watching "occasionally," they answered three recall questions about the content of the target episode which included an abortion plotline. If they answered two of the three recall questions correctly, they were then asked to respond to fifteen questions related to the abortion plotline. If they did not answer the recall questions correctly, the survey skipped to a battery of questions about abortion knowledge and attitudes followed by demographic questions. Participants who answered the recall questions correctly continued to these same survey sections after completing fifteen abortion plotline response questions. The first author watched each plotline and developed recall and response questions based on each plotline's content.

Finally, participants completed demographic measures and were subsequently thanked and compensated. The surveys for viewers exposed and unexposed to the abortion plotline were identical, except for the episode recall section, which was excluded from the unexposed viewer survey.

Exposure to Plot Lines

Among the sample, 696 (68.5%) reported watching *A Million Little Things*, and 44% ($n = 308$) of viewers answered at least two of the abortion plotline recall questions correctly. A total of 778 (76.6%) reported watching *Station 19* at least occasionally, and 44% ($n = 345$) of viewers answered at least two of the abortion plotline recall questions correctly. A total of 509 (50.1%) reported watching *Better Things* occasionally, and 48% ($n = 245$) of viewers answered at least two of the abortion plotline recall questions correctly. Among the sample, 21% ($n = 214$) were exposed to more than one of the shows. For ease of interpretation, we will refer to participants who correctly answered at least two recall questions as "exposed" viewers and all others as "unexposed" viewers, in which the "exposure" is the abortion plotline on each television show.

Abortion Knowledge

Because we could not identify a widely accepted, validated scale for abortion knowledge, we reviewed the literature to identify relevant question items. We identified and modified items from four surveys (Crawford et al., 2021; Swartz et al., 2020; Bessett et al., 2015; Lara et al., 2015) to create an original eight-item abortion knowledge index. This index included questions about abortion safety, abortion prevalence, and abortion methods. We created a summary score indicating the number of questions each participant answered correctly (range: 0 to 8). Higher scores on this index are associated with increased knowledge about abortion. Items in this measure included true or false questions in which a participant read statements about abortion, such as "the majority of people who have abortions already have children" (correct answer: true), "about 90% of abortions in the United States occur in the first trimester" (correct answer: true), and "having an abortion increases the likelihood that a person will have fertility problems in the future" (correct answer: false) and marked them as true or false. Multiple choice questions in which the participant had to select the correct answer included the items: "About how much does a first trimester abortion cost in the United States?" (correct answer: about $500), "How common is abortion in the United States?" (correct answer: About 25% of women in the U.S. have had an abortion), and "Have you ever heard of medication abortion? This is different than Plan B or the morning after pill." Each of these questions had four possible answers. We also asked about the participant's abortion knowledge related to their own community, such as: "If a friend asked me where she could get an abortion, I would know where she could go to get one" and "Do you think most communities in the U.S. have an abortion clinic? Your best impression or guess is fine." Possible responses to this question were "yes," "no," and "not sure."

Abortion Attitudes

We used the Community-Level Abortion Stigma scale (Sorhaindo et al., 2016) which asks 9 questions to measure attitudes towards abortion-seekers, including questions such as, "A person who has an abortion should feel badly about themselves" and "A person who has an abortion is committing a sin." Participants responded using a 5-point Likert-type scale with possible answers ranging from 1 "*strongly agree*" to 5 "*strongly disagree.*" These questions were combined into a scale from 1 (*most stigmatizing*) to 5 (*least stigmatizing*). The scale is designed such that lower scores are associated with lower levels of community stigma (reliability coefficient: 0.8994).

Behavioral Intent

To capture willingness to support abortion seekers, we used one variable as a proxy, in which respondents were asked to respond to the statement "I could support a person having an abortion even if I didn't agree with her decision" with a 5-point Likert-type scale response option ranging from *strongly disagree* (1) to *strongly agree* (5). Higher scores indicate higher reported agreement.

Analytic Plan

To address our three primary hypotheses, we conducted a series of four complementary analyses. In model 1, we assess associations between exposure to any of the three plot lines (compared to none) and the outcomes of interest. In models 2–4, we assess differences in outcomes of interest between those who were exposed to each individual plotline compared to those who were not exposed to that specific plot line. In all models, we included the following demographic covariates based on documented associations with the outcomes of interest: race, gender, level of education, income, religiosity, political affiliation, and political ideology (Jozkowski et al., 2018). We also accounted for prior experience with abortion, based on answers to the question, "Do you know anyone who has had an abortion?" allowing participants to select as many options that applied, such as, "I had an abortion," "A family member (sister, aunt,

cousin, mother, etc.),” and “I don’t know anyone who’s had abortions.” We estimated coefficients using ordinary least squares (OLS) regression and stepwise regressions. All analyses were conducted in STATA (v17.0) and statistical significance was evaluated at $p < .05$.

Results

Descriptive Statistics and Plotline Exposure

We found no statistically significant differences between those exposed and unexposed to any of the three plot lines by race/ethnicity ($\chi^2 = 6.41$; $p = .093$) or gender ($\chi^2 = 2.46$; $p = .292$). Compared to those unexposed to all plot lines, those exposed to any of the plot lines were typically younger ($\chi^2 = 38.71$; $p < .001$), more likely to have a college degree (or higher) ($\chi^2 = 15.10$; $p = .002$), more likely to be employed ($\chi^2 = 15.39$; $p < .001$), and reported a higher household income ($\chi^2 = 23.16$; $p = .002$). Those exposed to any of the plot lines compared to none were also more likely to identify as a Democrat and less likely to identify as Republican ($\chi^2 = 16.05$; $p = .003$) compared to unexposed participants. We found no statistically significant differences in self-report of having had an abortion ($\chi^2 = 0.01$; $p = .917$) or knowledge of a partner having had an abortion

by exposure status ($\chi^2 = 0.09$; $p = .762$), though exposed viewers were more likely than unexposed participants to report having a close friend who had an abortion ($\chi^2 = 7.08$; $p = .008$).

Abortion Plotline Exposure and Knowledge

Regarding abortion knowledge, participants answered a median of 2 questions (of 8) correctly and a mean of 2.6 questions correctly (*SD*: 1.7). Exposure to any of the three abortion plotlines was significantly associated with higher scores in abortion knowledge ($b = 0.28$. $p < .01$), after adjusting for demographic variables (Table 2). Stepwise regressions, assessing associations between each individual show and outcomes of interest, revealed that exposure to each individual plot line was not significantly associated with abortion knowledge. Additionally, covariates associated with abortion knowledge included identifying as non-heterosexual (any exposure $b = 0.83$, $p < .001$), religiosity (any exposure $b = -0.05$, $p < .01$), identifying as Black ($b = -0.39$, $p < .05$), income ($b = 0.06$, $p < .05$), education level ($b = 0.12$, $p < .05$), identifying as a Democrat ($b = 0.59$, $p < .001$), and having had a partner ($b = 0.40$, $p < .05$) or friend ($b = 0.28$, $p < .05$) who had an abortion. Gender was not associated with abortion knowledge level; however, identifying as a woman compared to identifying as a man

Table 2 Coefficients from OLS regressions predicting abortion knowledge ($N = 989$)

	Model 1	Model 2	Model 3	Model 4
	Exposed to any plot line vs. none	Exposed to *A Million Little Things* plotline vs. not	Exposed to *Better Things* plotline vs. not	Exposed to *Station 19* plotline vs. not
Plotline Exposure	*b*	*b*	*b*	*b*
Any	0.28**			
A Million Little Things		0.14		
Better Things			0.22	
Station 19				0.08
Demographics and Abortion Experience				
Woman (1 = Yes)	0.20	0.22*	0.24*	0.20
Latino (1 = Yes)	-0.13	-0.12	-0.12	-0.11
Black (1 = Yes)	-0.37*	-0.40*	-0.39*	-0.39*
Age (18–72)	0.10**	0.09*	0.10**	0.09*
Religiosity	-0.05**	-0.05**	-0.05**	-0.05**
Republican	-0.11	-0.11	-0.11	-0.10
Democrat	0.58***	0.59***	0.59***	0.60***
Income (<30k – 150k+)	0.06*	0.06*	0.06*	0.07*
Non-Heterosexual (1 = Yes)	0.83***	0.83***	0.83***	0.83***
Education Level	0.12*	0.12*	0.12*	0.13*
Had an Abortion (1 = Yes)	0.31	0.30	0.30	0.31*
Partner Had an Abortion (1 = Yes)	0.42*	0.41*	0.40*	0.40*
Friend Had an Abortion (1 = Yes)	0.28*	0.29**	0.28*	0.29**
Constant	1.28	1.43	1.35	1.41

Note. *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests)

Table 3 Coefficients from OLS regressions predicting abortion attitudes ($N = 989$)

	Model 1	Model 2	Model 3	Model 4
	b	b	b	b
Plotline Exposure				
Any	-0.02			
A Million Little Things		-0.05		
Better Things			0.05	
Station 19				-0.08
Demographics and Abortion Experience				
Woman (1 = Yes)	-0.46***	-0.46***	-0.46***	-0.45***
Latino (1 = Yes)	0.15	0.15	0.15	0.15
Black (1 = Yes)	-0.07	-0.07	-0.07	-0.08
Age (18–72)	-0.11***	-0.11***	-0.10***	-0.11***
Religiosity	0.11***	0.11***	0.11***	0.11***
Republican	0.29***	0.30***	0.29***	0.30***
Democrat	-0.01	-0.01	-0.02	-0.01
Income (<30k − 150k+)	-0.01	-0.01	-0.01	-0.01
Non-Heterosexual (1 = Yes)	-0.10	-0.10	-0.10	-0.10
Education Level	0.03	0.03	0.03	0.03
Had an Abortion (1 = Yes)	-0.15	-0.14	-0.15	-0.15*
Partner Had an Abortion (1 = Yes)	-0.33**	-0.33**	-0.33**	-0.32**
Friend Had an Abortion (1 = Yes)	-0.27***	-0.27***	-0.28***	-0.27***
Constant	2.27	2.26	2.23	2.28

Note. *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests)

Table 4 Coefficients from OLS regressions predicting supporting a friend ($N = 989$)

	Model 1	Model 2	Model 3	Model 4
	b	b	b	b
Plotline Exposure				
Any	0.15*			
A Million Little Things		0.14*		
Better Things			0.02	
Station 19				0.17*
Demographics and Abortion Experience				
Woman (1 = Yes)	0.32***	0.33***	0.33***	0.31***
Latino (1 = Yes)	-0.13	-0.13	-0.13	-0.12
Black (1 = Yes)	0.04	0.02	0.02	0.03
Age (18–72)	0.04*	0.04	0.04	0.04
Religiosity	-0.07***	-0.07***	-0.07***	-0.07***
Republican	-0.40***	-0.40***	-0.39***	-0.40***
Democrat	0.14	0.14	0.16	0.15
Income (<30k − 150k+)	0.05**	0.05**	0.05**	0.05**
Non-Heterosexual (1 = Yes)	0.14	0.14	0.14	0.14
Education Level	-0.05	-0.05	-0.04	-0.04
Had an Abortion (1 = Yes)	0.22*	0.21*	0.22*	0.23*
Partner Had an Abortion (1 = Yes)	0.39**	0.40**	0.39**	0.39**
Friend Had an Abortion (1 = Yes)	0.32***	0.32***	0.33***	0.32***
Constant	3.90	3.97	3.97	3.94

Note. *$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed tests)

was associated with greater abortion knowledge for those exposed to *A Million Little Things* ($b = 0.22$, $p < .05$) and *Better Things*, ($b = 0.24$, $p < .05$).

Abortion Plotline Exposure and Abortion Attitudes

Participants scored a median of 1.90 and a mean of 2.12 (*SD*: 0.95) out of 5 on the abortion attitudes scale. Exposure to any of the plotlines, compared to none, or to each individual plotline respectively, was not significantly associated with community level abortion stigma. However, being a woman was associated with lower levels of community-level stigma ($b = -0.46$, $p < .001$). Older age ($b = -0.11$, $p < .001$) and having a partner ($b = -0.33$, $p < .001$) or friend ($b = -0.27$, $p < .001$) who has had an abortion were associated with lower levels of community-level stigma. Religiosity ($b = 0.11$, $p < .001$) and identifying as a Republican ($b = 0.29$, $p < .001$) were associated with higher levels of community-level stigma (Table 3).

Abortion Plotline Exposure and Behavioral Intent

As shown in Table 4, exposure to any of the three abortion plotlines was significantly associated with higher scores of willingness to support someone seeking an abortion ($b = 0.15$, $p < .05$), after adjusting for demographic variables. Regarding individual plot lines, we found that exposure to *A Million Little Things* ($b = 0.14$, $p < .05$) and *Station*

19 ($b = 0.17$, $p < .05$), respectively, were associated with greater willingness to support someone to have an abortion ($b = 0.14$, $p < .05$; $b = 0.17$, $p < .05$, respectively), but exposure to *Better Things* was not. Across all models, identifying as a woman was associated with greater reported willingness to support someone seeking an abortion. Higher religiosity ($b = -0.07$, $p < .001$) and identifying as a Republican ($b = -0.40$, $p < .001$) were associated with less willingness to support someone seeking an abortion. Higher reported income ($b = 0.05$, $p < .01$) and having a partner ($b = 0.39$, $p < .01$) or friend ($b = 0.32$, $p < .001$) who has had an abortion predicted greater willingness to support abortion seeking.

Discussion

This study explores the associations between exposure to television programs with medically accurate abortion plotlines and abortion knowledge, attitudes, and behavioral intent. We found that exposure to any of three specific television plotlines was associated with higher abortion knowledge and higher willingness to support someone seeking an abortion but was not associated with attitudes about abortion. Our findings related to abortion knowledge build on past research finding increased abortion knowledge after exposure to a single abortion plotline (Sisson, et al., 2021) and comports with evaluations of entertainment education as contributing to small but significant increases in health knowledge (Hoffman et al., 2022; Shen & Han, 2014). Because abortion knowledge is relatively low even among those who support abortion access (Kearney et al., 2022), accurate television abortion plotlines may be one avenue to increase knowledge about abortion.

Further, our results indicate that exposure to plotlines with accurate depictions of abortion is not associated with differences in abortion attitudes. This finding diverges from claims made both by pro-choice advocates and entertainment content creators themselves about the power of television to change abortion attitudes (Galuppo et al., 2022). It does corroborate past research, which found no relationship between exposure to a single abortion plotline and support for abortion (Brooks et al., 2022; Sisson et al., 2021). It is possible that cumulative exposure to abortion plotlines may be more effective in decreasing stigmatizing attitudes than exposure to any one plotline. Abortion attitudes may also be particularly challenging to change compared to attitudes about other political issues. Interventions aimed at decreasing stigmatizing attitudes via first-person abortion video narratives found that attitudes either remained the same or became more negative post-exposure (Cutler et al., 2022; Hunt et al., 2022).

How a given viewer interprets a given fictional abortion plotline may also vary; in other words, the context in which audiences watch the plotlines may be just as or more important than the plotline itself. In their research on narrative persuasion and social problems, Polletta and Redman note, "the obstacle lies not so much in the stories they [television creators] tell as in the stories they are heard with" (2020, 8). It is also possible that the specific plotlines included in this study may not have been ideal content to increase positive abortion attitudes. For each of the abortion-seeking characters in our chosen plotlines, their abortions were one facet of the plotline, often occurring in one or two episodes at most, and not a crucial component of each characters' identity. Per social cognitive theory, content that has the greatest potential impact on attitude shift often features minority characters who are likable, physically attractive, and engage in friendly, frequent interactions with majority groups (Żerebecki et al., 2021). It is possible that viewers may not consider a character's abortion as part of their identity enough to characterize them as a "minority" social group. Shows that are more explicitly focused on abortion experiences may have a more significant impact on stigmatizing abortion attitudes across demographics.

Finally, we found that exposure to any of the three plot lines was associated with higher willingness to support someone seeking an abortion, which comports with existing evidence on correlations between plotline exposure and behavioral intentions (Kim et al., 2014; Whittier et al., 2005). Specifically, we find that exposure to *A Million Little Things* and *Station 19* were correlated with higher willingness to support someone seeking an abortion but that exposure to *Better Things* was not. This discrepancy between plotlines may be because of the content in each abortion plotline. On *Better Things*, Max conceals her abortion from her mother, and though she confides in a close family friend, much of the abortion plotline revolves around her decision not to disclose the abortion. By contrast, both *A Million Little Things* and *Station 19* feature characters who support others in seeking abortion care, which may provide a template to audiences for interaction between abortion seekers and their friends. In explaining social cognitive theory, Bandura (2002) notes that modeled behaviors, such as interactions between minority and majority groups, should be depicted without tension and in a positive light so that viewers might be willing to imitate these interactions in their lives. It may be that depictions of emotional support for someone seeking an abortion in two of our three sample plotlines enabled viewers to conceptualize how they might provide a similar kind of support to abortion seekers.

Regarding demographic characteristics, those who reported having a partner or friend who had an abortion and those who reported less religiosity had significantly greater

knowledge about abortion, lower stigmatizing attitudes about abortion, and higher willingness to provide support for a friend seeking an abortion. Higher income, higher education, older age, identifying as a Democrat, and identifying as non-heterosexual were associated with greater knowledge about abortion compared to their counterparts. Identifying as female and reporting lower religiosity were significantly associated with lower stigmatizing attitudes about abortion and higher support for someone obtaining an abortion. Reporting a past abortion was significantly associated with a higher willingness to support a friend seeking an abortion. These findings are in line with literature showing higher levels of support for abortion legality and availability among people identifying as female, Democrat, non-heterosexual, and less religious (Pew Research Center, 2022).

Limitations and Future Research Directions

This study has several limitations. First, although we recruited regular viewers of television shows with large national audiences, the generalizability of our results is limited as we did not have a nationally representative sample. Second, although we compared groups who differed in their exposure to the target abortion plotlines, this study is cross-sectional and correlational in design; we did not randomize participants into exposure groups or measure changes in outcomes over time. As a result, our findings may be confounded by factors associated with both the exposure to the plotlines and the outcomes and we cannot distinguish the directionality of significant associations. It is possible that those who were more knowledgeable about abortion chose to watch the plotlines (or recalled the details better) compared to those who were less knowledgeable. Third, because this study occurred in the months prior to the 2022 Supreme Court decision *Dobbs vs. Jackson Women's Health Organization*, it is possible that participants may have answered survey questions differently in the context of this new political landscape. Indeed, nationwide polls find that Americans are increasingly supportive of abortion rights in the wake of the *Dobbs* decision (AP-NORC, 2022). Finally, our study measured one-time exposure to one or more abortion plotlines, which is a relatively small "dose" of media exposure. We are limited in our ability to draw conclusions on different levels of exposures.

Future research should investigate associations between exposure to abortion plotlines and abortion knowledge, attitudes, and behaviors in a more representative sample and over time (including before and after exposure to abortion plotlines). Future research should also investigate the mechanisms by which this occurs, such as identification with characters, transportation into the narrative, and parasocial contact, if there are differences in correlations between type

of abortion content exposure (i.e., a plotline that directly depicts the abortion onscreen or a plotline that only refers to a past abortion) and audience knowledge, attitudes, and behaviors, and if these changes last over time. Additionally, future research might explore the relationship between the emotions evoked in viewers by abortion plotlines and corresponding abortion attitudes. One study of transgender characters on television found that the emotions of hope and disgust both mediated attitudes towards transgender characters and policies related to the rights of transgender people (Gillig et al., 2018). It is possible that similar relationships between emotion and attitudes hold true for characters seeking and obtaining abortions. Finally, future research might examine associations between cumulative exposure to multiple abortion plotlines and abortion attitudes over the course of several months or years. Indeed, some research documents a correlation between "high" levels of representation of minority characters on television and increased positive attitudes towards minority groups among viewers (Garretson, 2015). It is worth exploring whether there is a dose-response relationship between exposure to a certain number of abortion plotlines and increases in abortion knowledge, decreases in stigmatizing attitudes, and action taken to support people seeking an abortion, such as providing logistical or financial support to someone seeking an abortion or voting for abortion-supportive policy measures.

Practice Implications

Despite being exploratory, our findings have potential cultural and public health implications. Our study builds on public health research regarding the effectiveness of entertainment media as a messenger for accurate health information, including information about abortion (Hoffman et al., 2022). Increasing knowledge about abortion is a public health priority, as the American public knows relatively little about abortion legality and safety (Patev & Hood, 2021). Our results indicate that exposure to medically accurate television abortion plotlines may be one way to disseminate accurate information and increase empathy for people seeking abortions. Though television viewing is not a health education intervention, research finds that mass media, including television, is a leading source of health information for U.S. viewers (Dahlstrom, 2014), and fictional storylines may be more interesting for viewers to watch and thus more effective in communicating information than formal health education interventions (Moyer-Gusé, 2008).

In addition, these findings regarding an association between exposure to medically accurate abortion plot lines on television and willingness to support people seeking abortion are important in our current political context. As many states continue to decimate abortion access, the need

for political, logistical, financial, and emotional support for abortion seekers nationwide grows increasingly urgent. It would be useful for future research to measure if behavioral intentions result in real life actions in support of abortion seekers, and what those actions are, which could include but are not limited to voting in support of abortion access, looking up information about local abortion clinics, or providing emotional support to a friend after an abortion. Advocates and content creators interested in destigmatizing abortion might focus on depictions that model ways for viewers to support abortion access and abortion seekers in their lives.

Conclusion

Given the public health crisis of diminishing abortion access in the United States, evaluating the content of televisual portrayals of abortion, and understanding possible associations between content and viewer knowledge, attitudes, and behaviors warrants more attention. Our results suggest that knowledge about abortion and willingness to support someone seeking an abortion is higher among people who have been exposed to medically accurate and realistic abortion depictions, compared to no exposure, whereas community-level abortion stigma does not differ based on exposure. Our analysis expands the research literature on entertainment education rooted in social cognitive theory to add abortion plotlines to the lexicon of potentially impactful health media and suggests new avenues for experimental and longitudinal work linking abortion-related media exposure to individual and community-level abortion attitudes. As researchers, advocates, and content creators reconcile with a post-*Dobbs* political landscape, we must prioritize understanding the complex interplay between televisual representation and its potential influence on abortion knowledge, attitudes, and behavior.

Declarations

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